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RUNNYMEDE DEVELOPMENT CORPORATION LIMITED WORKS

1986 AIR QUALITY SURVEY REPORT

(Landfill Site - Gas Analysis)

AT

Victoria Park and Gerrard Street East

Scarborough, Ontario

June 1986

ARB-066-87-AQM

NOVEMBER 1987

TD
883
.B45
R86
1987

Ontario
Ministry of the Environment

E. PICHÉ, Director
Air Resources Branch

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at
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Prepared for:

Central Region
Ministry of the Environment

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Air Resources Branch
Ministry of the Environment

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EXECUTIVE SUMMARY

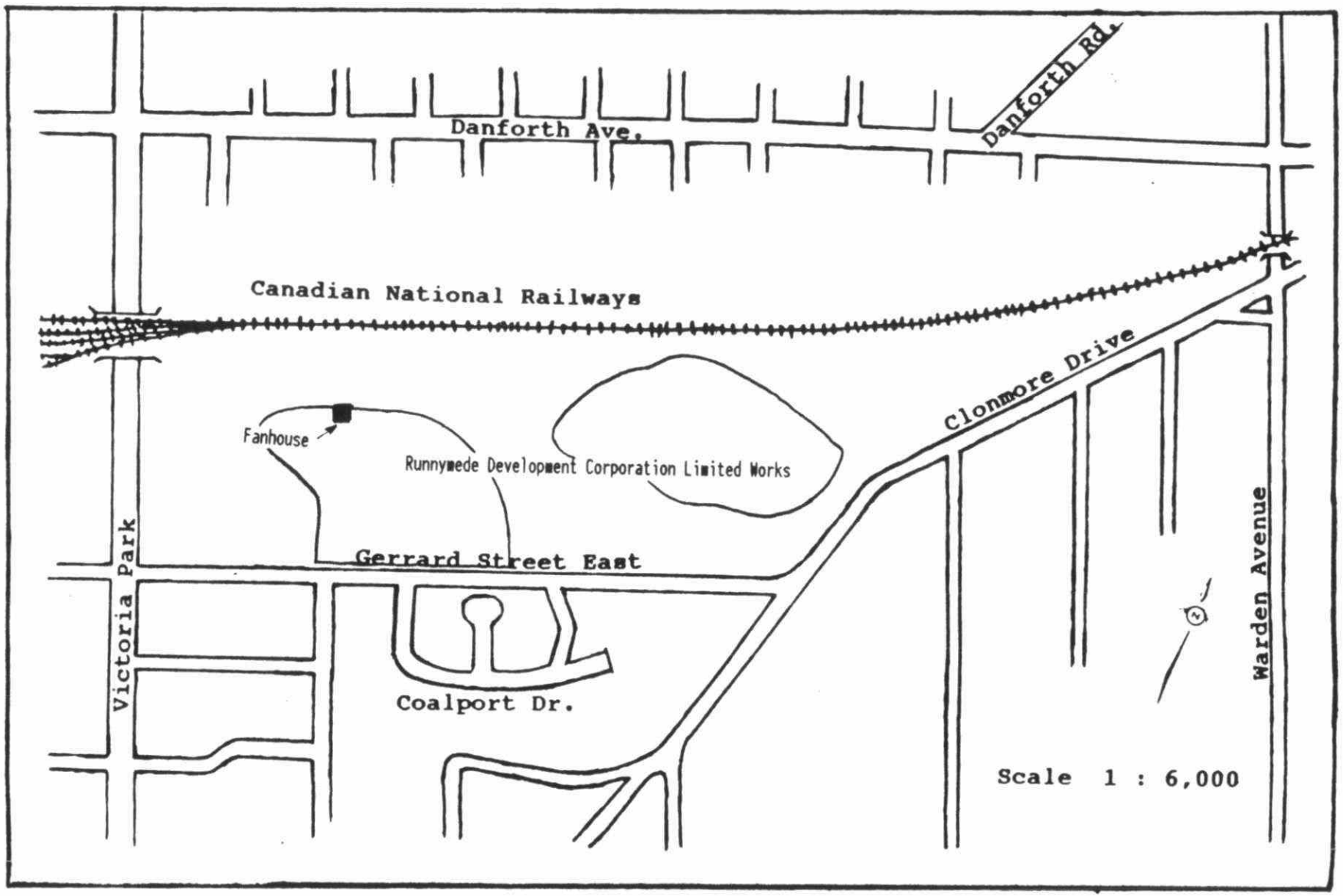
At the request of the Central Region of the Ministry of the Environment, the Monitoring and Instrumentation Development Unit of the Air Resources Branch conducted an ambient air quality survey during June of 1986 in the vicinity of the landfill site known as Runnymede Development Corporation Limited Works at the northeast corner of Victoria Park and Gerrard Street East in Scarborough. The air was screened for over 130 different organics and up to 10 different gaseous common contaminants during this air quality survey.

From the acquired air quality data, all ground level concentrations were less than the Ministry of the Environment Standards, Criteria, Guidelines and Provisional Guidelines. Some odour was perceived downwind of the fanhouse but in general, the air quality was found to be typical of an urban environment.

SOMMAIRE

À la demande de la région du Centre du ministère de l'Environnement, l'Unité de la mise au point des instruments et de la surveillance de la Direction des ressources atmosphériques a mené, en juin 1986, une étude sur la qualité de l'air ambiant, près du lieu de remblai dit Runnymede Development Corporation Limited Works, situé au coin nord-est de l'intersection de l'avenue Victoria Park et de la rue Gerrard est, à Scarborough. Cette étude de la qualité de l'air a porté sur plus de 130 éléments organiques différents et sur un maximum de 10 polluants gazeux courants.

Selon les données obtenues quant à la qualité de l'air, toutes les concentrations au niveau du sol étaient inférieures aux normes, critères et lignes directrices établis et provisoires du ministère de l'Environnement. On a décelé certaines odeurs sous le vent du bloc de ventilation, mais, en général, la qualité de l'air s'est avérée typique d'un environnement urbain.



General Area Map - Runnymede Survey

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1.0 INTRODUCTION

At the request of the Central Region of the Ministry of the Environment, the Monitoring and Instrumentation Development Unit of the Air Resources Branch conducted an air quality survey on-site and downwind of the Runnymede Development Works at the northeast corner of Victoria Park and Gerrard Street East in Toronto during May and June of 1986. This was an investigative air quality survey centered on the characterization of gaseous emissions (if any): downwind of the fanhouse and landfill area; from the 'goosenecks' located just south of Gerrard Street East; and general air quality measurements from atop the landfill and in the immediate residential areas.

2.0 BACKGROUND

The results of the first air quality survey conducted at this site were presented in January of 1986. The monitoring was carried out in May of '85 and the results were obtained from a sampling port in the main exhaust duct of the fanhouse. Sampling trains were directly connected from this port to the TAGA 3000 mass spectrometer and VOC (volatile organic contaminant) cartridge sampling systems. For the mass spectrometric results, the standard 'fingerprint' programmes were followed. From these programmes, only one dominant organic compound was revealed - this being tentatively identified as butylamine with a conservative estimate of concentration in the low 100's ug/m^3(microgram per cubic metre) range. (Butylamine is an intermediate product that is common in the production of emulsifying agents, pharmaceuticals, insecticides, dyes and tanning agents. From literature, the absolute perception limit (odour) is between 2 and 300 ug/m^3 and it has a sour, ammonical quality. At present, there is no Ministry of the Environment Standard, Criterion, Guideline or Provisional Guideline established for this organic. However as stated in the literature, some irritation may be experienced by man at concentrations in excess of 15,000 ug/m^3 ~~).

Since the TAGA is not sensitive to aliphatic and aromatic organics, a VOC sampling programme was run supplemental to the aforementioned TAGA programme. Six cartriges were collected from this same sampling train for durations of 15 minutes to one-hour. The resulting GC/MS (gas chromatograph mass spectrometric) analyses of these cartridges revealed high concentrations of aliphatic and aromatic organics from C_5 to C_{10}. However specific identification and quantitation of these organics were impossible since these adsorbed organics overloaded the GC columns - even for the 15-minute sample. These were stack samples and they were acquired to assist in the characterization of emissions from this source. It was believed that the high concentrations were due to the following conditions: this was a new gas-collector system; that the fan/blower system had just been turned on and that perhaps some of the concentrations were due to the lubricants used therein. True ambient air point of impingement measurements were **NOT** conducted at this time since this gas-collector system had not been on-line for any significant period of time and thus had not reached its normal mode of operation.

In May of 1986, several more VOC cartridges were exposed in the same manner as those in 1985. The overall concentrations were less but the characterization was similar.

On the 18th, 20th and 24th of June, a true ambient air monitoring programme was carried out. This report will only address the data acquired during these three days.

As mentioned earlier, only gas chromatographic analysis would result in any appreciable findings for the aliphatic and aromatic organics. From the previous results, these were deemed to be the major classes of organics originating from this landfill area....hence Mobile Air Monitoring Unit #1 (MAMu#1) and two sequential sampler units (for the acquisition of VOC samples) were used during this survey. The analyses of the VOC samples were performed by a GC/MS system in the Branch's main laboratory at 880 Bay Street in downtown Toronto whereas on-site analysis of the other samples was carried out in real-time by the field GC system.

The instrumentation of MAMu#1 is shown in Table #1 and the monitoring capabilities together with the Ministry of the Environment Standards, Criteria, Guidelines and Provisional Guidelines are shown in Table #2. The general layout of this landfill area and the monitoring sites are shown on Map #1.

**

Footnote: Handbook of Environmental Data on Organic Chemicals
2nd Edition, Karel Verschueren
Van Nostrand Reinhold Company, Toronto, 1983

3.0 DISCUSSION OF RESULTS

3.1 Meteorological Conditions

After the May characterization work, active ambient air monitoring was conducted in the vicinity of this landfill site on June 18, 20 and 24th.

On Wednesday, June 18th, a northwest-southeast orientated ridge of high pressure was lying through the upper Great Lakes and was forecast to lie through Lake Ontario by noon Thursday. The air mass in southern Ontario was dry and stable and the winds were moderate (up to 20 km/hr) and northwesterly throughout most of the day. It was a clear, bright sunny day in Toronto with the temperature in the low twenties.

On Friday, June 20th, a high pressure area was centered over central Ontario and was forecast to lie over western Quebec by early Saturday. Because of this system, the air mass in southern Ontario was again dry and stable with moderate (up to 20 km/hr) northeasterly winds. It was a warm, clear sunny day in Toronto.

On Tuesday, June 24th, a high pressure area was centered just west of Lake Superior. In front of this high pressure area, a northeast southwest orientated trough of low pressure was centered over the lower Great Lakes. It was overcast (stratocumulus) and the winds were brisk (in excess of 35 km/hr) and northnorthwesterly. The temperature was in the high teens. As the high pressure area approached, the air mass over Toronto was expected to dry out and become stable. A sunny day was forcast for Wednesday.

3.2 Active Monitoring Downwind of the Fanhouse; Gas-collection System

During the late morning of June 18th, approximately 1.8 hours of common contaminant data and 2 half-hour GC samples were acquired on-site approximately 40 metres downwind of the fanhouse. This monitoring is denoted by Monitoring Period A182 (MP A182). As noted in Table #3, the ground level concentrations (glc's) of the common contaminants were relatively low and indicative of a clean urban environment. For the two GC samples (Table #4), the total organic concentrations were only 88 and 38 ug/m^3 (micrograms per cubic metre) with the alkane fraction comprising approximately 50% of these total concentrations and the aromatic fraction 35%. Only a few specific organics were detected in these samples (45 in the first sample and only 17 in the second) and no Ministry of the Environment Standard, Guideline or Provisional Guideline was exceeded or even approached for any of these organics.

During the late afternoon on the 18th, a second short survey was conducted downwind of the fanhouse (MP A184). This survey lasted for an hour and it was conducted on Rathmore Avenue, in the residential area just south of Gerrard Street East. One 30-minute GC sample and approximately one hour of common contaminant data were acquired during this period and results were again indicative of a clean urban environment. The total organic concentration was only 98 ug/m^3 with the alkane fraction comprising 54% of this total and the aromatic fraction 35%. As can be seen from Tables 3 and 4, the results were similar to those acquired during MP A182.

During the late morning of June 20th, MAMu#1 was situated in the mini-Plaza parking lot southwest of the fanhouse. The monitoring van was approximately 40 metres downwind of the fanhouse and while at this site, two 30-minute GC samples and one hour of common contaminant data were acquired. For the common contaminants, the results were similar to those reported for June 18th and again were indicative of a relatively clean urban environment (ref. MP A201 of Table #3). For the organics, the results of the first GC sample were deemed to have been contaminated by some automotive emissions since the total organic concentration was in excess of 800 ug/m^3 with the major components being alkanes with a total fractional concentration of 560 ug/m^3. The results of the second GC sample, taken an hour later, revealed similiar concentrations and characteristics as those obtained on June 18th. The total organic concentration for this second sample was only 97 ug/m^3 and the alkane fraction comprised 57% of this total. Even when one considers the sample that had obvious vehicular exhaust emission contamination, no Ministry

of the Environment Guidelines or Standards were approached or exceeded for any of the measured contaminants.

On June 24th, MAMu#1 was positioned on the north side of Gerrard Street East, near the entrance gate to the landfill area and approximately 70 metres downwind of the fanhouse. Under brisk northnorthwesterly winds and commencing at 1118 hrs, two half-hour GC samples and 1.7 hours of common contaminant data were acquired at this site (MP A242). From the GC samples, the resulting organics concentrations were low and similar to those reported for the other days. The average total organic concentration was 109 ug/m^3 and the average alkane fraction comprised 59% of these totals and the aromatic fraction 32%. For the common contaminants, low glc's of THC (total hydrocarbons), CH_4 (methane), CO (carbon monoxide) and NO_x (oxides of nitrogen) were measured. The respective maximum half-hour (MHH) average glc's for these pollutants were 2.52, 1.05, 0.46 and 0.03 ppm (parts per million). Some odour was perceived by the environmental staff at this site during this time and this is reflected by the low, yet significant glc's of TRS (total reduced sulphur) compounds. The MHH average glc of TRS measured at this site was 0.011ppm. Total Reduced Sulphur compounds may contain the following: Hydrogen Sulphide, Methyl Mercaptan, Dimethyl Sulphide, Dimethyl Disulphide, Carbonyl Sulphide and several other odourous compounds. These odourous compounds have different odour thresholds ranging from less than one part per billion to several parts per million. The continuous gas analyzer in the MAMu has a detection limit of approximately 4 parts per billion (i.e. 0.004 ppm) for TRS. The Ministry has no Standard for this contaminant that would be applicable to a landfill site. However there is a Standard for TRS that was developed solely for Kraft Pulp Mills and its concentration for an allowable maximum half-hour average glc at the point of impingement is 0.027 ppm.

After 1300 hrs, MAMu#1 moved into the residential area south of Gerrard Street East and set up near to #10 Coalport Drive. The winds were still northnorthwesterly and brisk and monitoring commenced at this site at 1333 hrs. One half-hour GC sample and approximately 0.8 hours of common contaminant data were acquired at this second downwind site (MP A243). Lower organic concentrations were determined from this GC sample than those determined during the morning. The total organic concentration was only 71 ug/m^3 and the alkane fraction comprised 73% of this total. Gerrard Street East has a fairly high traffic volume. Because this monitoring site was south of this street and there was a brisk northnorthwesterly wind during this time, the majority of the organics detected in this sample were thought to be from vehicular exhaust. This is supported by the higher percentage contribution of the alkane fraction to the total organic concentration. For the common contaminants, all glc's were low except for TRS. The MHH

average glc of TRS detected at this site was 0.010 ppm (Table #3) and some odour was perceived by the Ministry staff.

To establish the source of TRS as measured on this date, MAMu#1 monitored upwind of the landfill site after 1410 hrs. MAMu#1 sat up on Thora Avenue, just south of Danforth Avenue and commenced acquiring data at 1428 hrs. One GC sample and approximately one hour of common contaminant data were acquired at this upwind site (MP A244). The winds were still northerly and moderate. The analysis of the GC sample revealed a low concentration of organics (127 ug/m^3) with the alkane fraction accounting for 60% of the total. From the common contaminant data: a slight increase in the MHH average glc's of CO and NO_x were measured (0.8 ppm for CO and 0.05 ppm for NO_x); and a dramatic decrease in the glc of TRS was measured (the MHH average glc was now 0.002 ppm; i.e. one-half of the detection limit of the TRS analyzer). None of the Ministry's Standards, Criteria, Guidelines or Provisional Guidelines were exceeded for any of these contaminants and the results obtained at this upwind site were deemed to be indicative of vehicular emissions.

3.3 The 'Goosenecks'

The goosenecks are vents from a passive gas collection system located just south of Gerrard Street East and just south of the Runnymede landfill site. At noon on May 14th, a sample line from the monitoring unit was inserted into one of these goosenecks. No odour was detected by Ministry staff and at 1222 hrs, sampling commenced. As can be seen from the results (MP A141 and Table #3), the MHH average concentrations of THC, CH_4, and TRS were all very low. However significant concentrations of CO and NO_x were measured. The MHH average concentration of CO was 5.31 ppm and for NO_x 0.10 ppm. This was essentially a stack sampling exercise and as such, the Ministry Air Quality Criteria, Standards and Guidelines would not be applicable. Rather these measurements were for a characterization study of possible emmisions from these goosenecks. Nevertheless, these concentrations were still less than the stated Ministry Criteria (30 ppm for CO and 0.20 ppm for NO_2, a component of NO_x). Since no odours were perceived and the THC concentrations were low, no GC sample was acquired.

Thus from the goosenecks, no reduced sulphur compounds were detected and all the other measurements indicated that concentrations would be less than any Ministry of the Environment Guidelines or Criteria.

3.4 Atop the Landfill Area

During the afternoon of June 18th, a sampling hose was extended from the monitoring unit and placed at the surface of the landfill site. This monitoring was carried out at a site approximately 300 metres east of the fanhouse and yet, not downwind of the fanhouse. Commencing at 1308 hrs, 1.7 hours of common contaminant data and 2 half-hour GC samples were acquired (refernce to MP A183). From the acquired common contaminant data, all glc's were low except for THC. At the start of monitoring, some generator exhaust was monitored by the continuous analyzers but the results were only reflected by higher THC concentrations - albiet the MHH average glc of THC was only 2.49 ppm. Low organic concentrations were also determined from the two GC samples. The average total organic concentration was only 147 ug/m^3.

A sequential sampler unit was set at this site and six one-hour VOC samples were acquired during the night of June 18th and early morning of the 19th. These exposed cartridges were later analyzed at the Air Resources main laboratory and the results are shown in Table #5. These analyses revealed several things, namely: no major organic was detected in any of the samples (the maximum concentration for any particular organic was less 25 ug/m^3); a low number of organics were identified in these samples (the range being 10 to 40 with an average of 20); and the overall concentrations for the total organics were very low (an average of only 75 ug/m^3) with the average alkane fraction accounting for approximately 55% of these totals and the aromatics 36%.

Thus the environmental data acquired atop of this landfill site was indicative of a relatively clean urban environment and no Ministry of the Environment Standards, Criteria, Guidelines or Provisional Guidelines were exceeded for any of the detected gaseous contaminants.

3.5 The Residential Area

Concurrant with the landfill area sampling programme of June 18th, a second sequential sampler unit was placed at the corner of Coalport Drive and Rathmore Avenue. Over the same time period, another seven one-hour VOC samples were acquired.

From these VOC results (Table #5), the organic concentrations were slightly higher than those reported for the sampling done atop the landfill area. The average total organic concentration was 111 ug/m^3 (as compared to 75 ug/m^3) with essentially equal contributions from the alkane and aromatic fractions (40 to 45%). Only a few specific organics were detected in these samples (average number being 22) and all individual or specific concentrations were less than 40 ug/m^3. Thus this data was also indicative of a clean urban environment. None of the Ministry's Provisional Guidelines, Guidelines or Criterion were exceeded for any of the specific organic pollutants detected in these samples.

4.0 SUMMARY

At the request of the Central Region and as a result of the initial findings during May of 1985, the Air Resources Branch conducted an ambient air quality survey in the vicinity of the Runnymede Development Corporation Limited Works at Victoria Park and Gerrard Street in Scarborough during June of 1986. The air in this area was screened for over 130 different organics and up to 10 common gaseous contaminants.

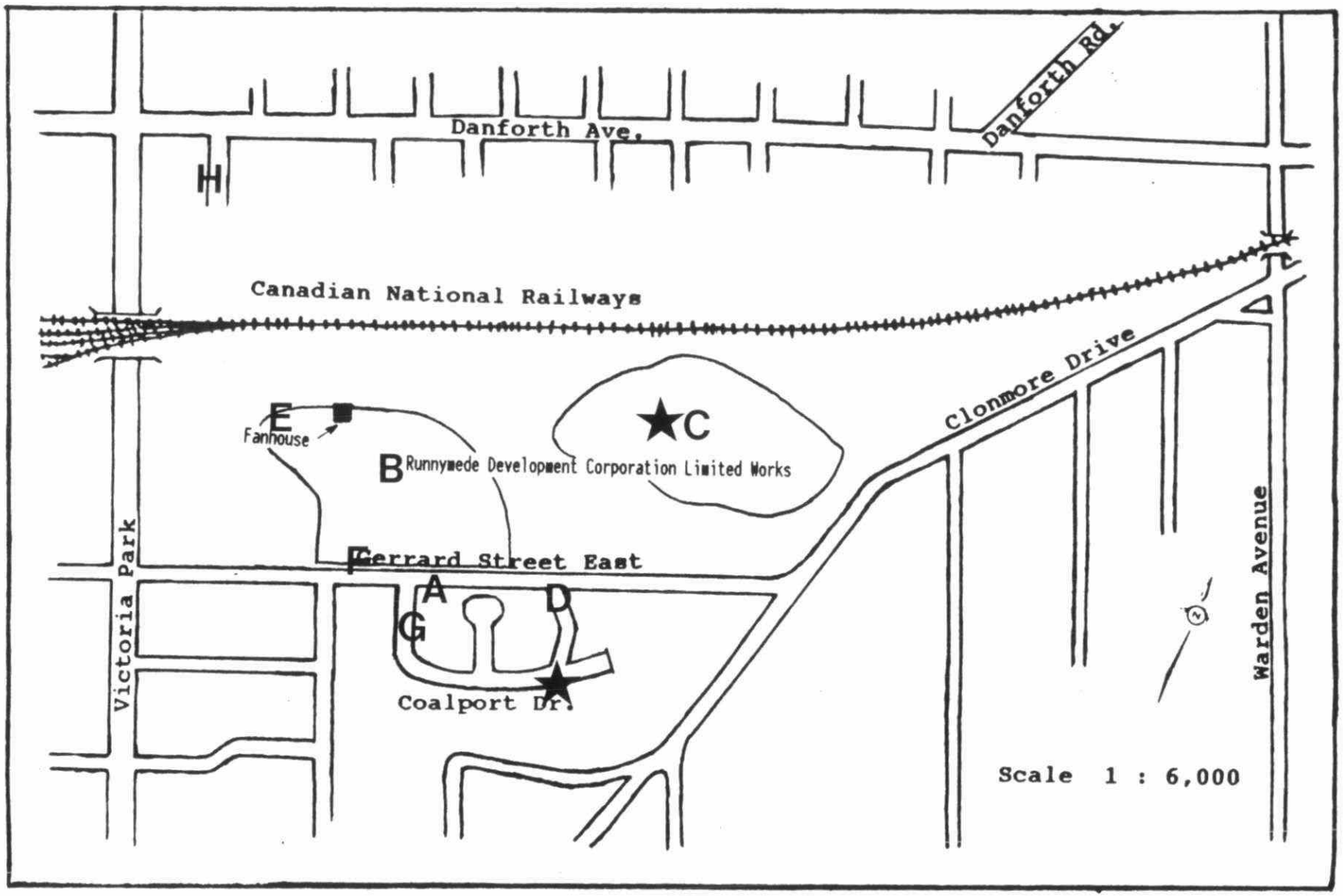
From the ambient air data acquired downwind of the fanhouse (i.e. of the dynamic gas-boundary collection system) of this landfill area, no Ministry of the Environment Standards, Criteria or Guidelines were exceeded. Usually less than 50 specfic organics were detected in the gas chromatographic (GC) samples and the total organic concentrations were low - usually less 150 ug/m^3 (micrograms per cubic metre). For the common contaminants, concentrations indicative of an urban environment were measured.

Some odour was perceived by the Ministry staff while downwind of this fanhouse and this was reflected by the significant concentrations of Total Reduced Sulphur (TRS) compounds. The maximum half-hour average concentration of TRS detected off-site and downwind of this fanhouse was 0.011 ppm (parts per million). Total Reduced Sulphur compounds may contain the following: Hydrogen Sulphide, Methyl Mercaptan, Dimethyl Sulphide, Dimethyl Disulphide, Carbonyl Sulphide and several other odourous compounds. These odourous compounds have different odour thresholds ranging from less than one part per billion to several parts per million. The continuous gas analyzer in the MAMu has a detection limit of approximately 4 parts per billion (i.e. 0.004 ppm) for TRS. The Ministry has no Standard for this contaminant that would be applicable to a landfill site. However there is a Standard for TRS that was developed soley for Kraft Pulp Mills and its concentration for an allowable maximum half-hour average ground level concentration at the point of impingement is 0.027 ppm.

From the ambient air data acquired at the 'Goosenecks' (vents for the passive gas collection system located just to the south of Gerrard Street East), atop the landfill site and in the residential area directly south of this site, all concentrations were less than the Ministry of the Environment Standards, Criteria or Guidelines.

Some odour was perceived downwind of the fanhouse but in general, the air quality was found to be typical of an urban environment.

APPENDIX



Letters - MAMu#1 Monitoring Sites

★ Sequential Sampler Sites

MAP #1

Monitoring Sites

TABLE #1

THE INSTRUMENTATION OF MOBILE AIR MONITORING UNIT #1

Instrument	Manufacturer	Analytical Technique	Full Scale Sensitivity
THC, CH4, TH-M analyzer	Ingenieur-Produktions-Gruppe Munchen (IPM) RS-t	Dual flame ionization	50 ppm THC (as CH4)
H2S,SO2,NOx sources	Hartmann & Braun Prufgasgenerator	N/A	N/A
TRS/SO2 analyzer	Monitor Labs 8850 c/w ML 8770	Fluorescence	0.5 ppm SO2 0.5 ppm TRS
NOx, NO2, NO analyzer	Monitor Labs 8840	Chemi-Luminescence	1.0 ppm NOx (as NO2)
CO analyzer	Thermo Electron P48	Gas Filter Correlation	100 ppm CO (digital)
O3 analyzer/ source	Dasibi 1003-AAS	UV Absorption	1.0 ppm O3 (digital)
CO & THC sources	Matheson	Compressed Gas	N/A
Gas Chromatograph	HP 5880 Dual Capillary Column	Flame Ion-ization Det.	as set per calibrations

Meteorological Instrumentation

Instrument	Manufacturer	Scale
** Wind speed	Lambrecht GmBH	km/hr
** Wind direction	Lambrecht GmBH	degrees
Temperature	Weather Measure (WM) T621	degrees Celsius
Humidity	WM-HM-11P	absolute & %
Barometric pressure	WM-BM70-B242	millibars
Solar Radiation	WM Star Pyranometer	milliwatts/cm2

** These instruments are located on top of a 10 metre retractable tower

Table 2

Characteristics of the Organics Measured by the Gas Chromatographic Systems of MAMu's 1 and 2

All concentrations are in terms of ug/m3 (micrograms per cubic metre)

	Detection Limits	Standards, Guidelines or Prov.Guidelines	Criterion	TWA	STEL	Alternate Names
1 PROPANE	0.2					
2 PROPADIENE	0.3					ALLENE
3 PROPYNE	0.3					METHYL ACETYLENE
4 CHLOROMETHANE	0.3	20000 (2)	7000 (A)	105000	205000	METHYL CHLORIDE
5 CYCLOPROPANE	0.3					
6 2-METHYLPROPANE	0.3					ISOBUTANE
7 CHLOROETHENE	0.3	560 (2)	280 (A)	5000	10000	VINYL CHLORIDE; CHLOROETHYLENE
8 2-CHLORO-2METHYLPROPANE	0.3					
9 1-BUTENE	0.3					
10 1,3-BUTADIENE	0.3					
11 BUTANE	0.2			1900000		*n-BUTANE*
12 1-BUTYNE	0.3					ETHYLACETYLENE
13 CHLOROETHANE	0.3			2600000	3250000	ETHYL CHLORIDE
14 3-METHYL-1-BUTENE	0.3					ISOAMYLENE
15 2-METHYLBUTANE	0.3					ISOPENTANE
16 2-METHYL-1-BUTENE	0.3					
17 PENTANE	0.2			1800000	2250000	*N-PENTANE*
18 2-METHYL-1,3-BUTADIENE	0.4					ISOPRENE
19 trans-2-PENTENE	0.2					
20 cis-2-PENTENE	0.2					
21 DICHLOROMETHANE	1.5	100000 (1)	100000 (B)	350000	1740000	METHYLENE CHLORIDE
22 2-METHYL-2-BUTENE	0.3					
23 2,2-DIMETHYLBUTANE	0.2					NEOHEXANE
24 trans-1,2-DICHLOROETHENE	0.3					
25 3-METHYL-1-PENTENE	0.2					
26 4-METHYL-1-PENTENE	0.2					
27 CYCLOPENTANE	0.2					
28 2,3-DIMETHYLBUTANE	0.2					
29 2-METHYLPENTANE	0.2					
30 3-METHYLPENTANE	0.2					
31 1-HEXENE	0.3					
32 cis-1,2-DICHLOROETHENE	0.3			790000	1000000	cis-1,2-DICHLOROETHYLENE; SYM-DICHLOROETHYLENE

Table 2

Characteristics of the Organics Measured by the Gas Chromatographic Systems of MAMu's 1 and 2

All concentrations are in terms of ug/m3 (micrograms per cubic metre)

	Detection Limits	Standards, Guidelines or Prov.Guidelines	Criterion	TWA	STEL	Alternate Names
33 2-CHLOROBUTANE	0.6					sec-BUTYL CHLORIDE
34 1-CHLORO-2-METHYLPROPANE	0.4					
35 HEXANE	0.3	35000 (2)		180000		*n-HEXANE*
36 CHLOROFORM	2.2	1500 (2)	500 (A)	50000	225000	TRICHLOROMETHANE
37 trans-3-HEXENE	0.3					
38 3-CHLORO-2-METHYLPROPENE	0.3					ISOBUTENYL CHLORIDE
39 METHYLCYCLOPENTANE	0.2					
40 2,4-DIMETHYLPENTANE	0.2					
41 1,2-DICHLOROETHANE	0.2			40000	60000	ETHYLENE CHLORIDE
42 2,2-DIMETHYLPENTANE	0.4					
43 2,2,3-TRIMETHYLBUTANE	0.2					
44 1,1,1-TRICHLOROETHANE	1.0	350000 (1)	115000 (A)	19000000	2450000	METHYL CHLOROFORM
45 1-CHLOROBUTANE	0.4					n-BUTYL CHLORIDE
46 BENZENE	0.2	10000 (1)	3300 (A)	30000	75000	
47 TETRACHLOROMETHANE	0.9	1800 (2)	600 (A)	20000	125000	CARBON TETRACHLORIDE
48 3,3-DIMETHYLPENTANE	0.2					
49 CYCLOHEXANE	0.2	300000 (2)	100000 (A)	1050000	1300000	HEXAHYDROBENZENE
50 2,3-DIMETHYLPENTANE	0.3					
51 2-METHYLHEXANE	0.5					ISOHEPTANE
52 CYCLOHEXENE	0.3			1015000		
53 DIBROMOMETHANE	18.4					METHYLENE DIBROMIDE; METHYLENE BROMIDE
54 1,2-DICHLOROPROPANE	0.6					PROPYLENE CHLORIDE
55 3-METHYLHEXANE	0.5					
56 2,3-DICHLOROPROPENE	0.7			5000	50000	2,3-DICHLOROPROPYLENE
57 TRICHLOROETHENE	0.3	85000 (1)	28000 (A)	270000	1080000	TRICHLOROETHYLENE
58 2,2,4-TRIMETHYLPENTANE	0.2					ISOOCTANE
59 1-HEPTENE	0.3					
60 HEPTANE	0.2			1600000	2000000	*n-HEPTANE*
61 trans-2-HEPTENE	0.3					
62 METHYLCYCLOHEXANE	0.2			1600000	2000000	HEXAHYDROTOLUENE
63 2,2-DIMETHYLHEXANE	0.2					
64 ETHYLCYCLOPENTANE	0.2					

Table 2

Characteristics of the Organics Measured by the Gas Chromatographic Systems of MAMu's 1 and 2

All concentrations are in terms of ug/m3 (micrograms per cubic metre)

	Detection Limits	Standards, Guidelines or Prov.Guidelines	Criterion	TWA	STEL	Alternate Names
65 4-METHYLCYCLOHEXENE	0.3					
66 2,5-DIMETHYLHEXANE	0.5					
67 1-CHLOROPENTANE	0.4					n-AMYL CHLORIDE; PENTYL CHLORIDE
68 1,1,2-TRICHLOROETHANE	1.1					VINYL TRICHLORIDE
69 2,3,4-TRIMETHYLPENTANE	0.2					
70 TOLUENE	0.2	2000 (1)	2000 (A)	375000	560000	*METHYLBENZENE*; PHENYLMETHANE
71 1,3-DICHLOROPROPANE	0.7			350000	510000	TRIMETHYLENE CHLORIDE
72 2-METHYLHEPTANE	0.2					
73 4-METHYLHEPTANE	0.2					
74 c-1,3-DIMETHYLCYCLOHEXANE	0.2					
75 3-METHYLHEPTANE	0.2					
76 1,2-DIBROMOETHANE	2.1					ETHYLENE DIBROMIDE; ETHYLENE BROMIDE
77 1,1-DIMETHYLCYCLOHEXANE	0.3					
78 1-OCTENE	0.4	150000 (3)	50000 (A)			
79 trans12DIMETHYLCYCLOHEXANE	0.3					*trans-1,2-DIMETHYLCYCLOHEXANE
80 trans-4-OCTENE	0.3					
81 TETRACHLOROETHENE	0.9			335000	1340000	TETRACHLOROETHYLENE; PERCHLOROETHYLENE
82 c-1,4-DIMETHYLCYCLOHEXANE	0.3					
83 OCTANE	0.3			1450000	1800000	*n-OCTANE*
84 trans-2-OCTENE	0.6					
85 cis12DIMETHYLCYCLOHEXANE	0.2					
86 CHLOROBENZENE	0.4			350000		PHENYL CHLORIDE
87 ETHYLCYCLOHEXANE	0.1					
88 1-CHLOROHEXANE	0.5					n-HEXYL CHLORIDE
89 ETHYLBENZENE	0.3	4000 (1)	4000 (B)	435000	545000	
90 m-XYLENE	0.3	2300 (4)	2300 (A)	435000	655000	*1,3-DIMETHYLBENZENE*
91 p-XYLENE	0.3	2300 (4)	2300 (A)	435000	655000	*1,4-DIMETHYLBENZENE*
92 4-METHYLOCTANE	0.3					
93 2-METHYLOCTANE	0.3					
94 3-METHYLOCTANE	0.3					
95 STYRENE	0.5	400 (1)	400 (A)	215000	425000	*ETHENYLBENZENE*; PHENYLETHYLENE; VINYLBENZENE
96 1,4-DICHLOROBUTANE	0.3					

Table 2

Characteristics of the Organics Measured by the Gas Chromatographic Systems of MAMu's 1 and 2

All concentrations are in terms of ug/m3 (micrograms per cubic metre)

		Detection Limits	Standards, Guidelines or Prov.Guidelines	Criterion	TWA	STEL	Alternate Names
97	o-XYLENE	0.3	2300 (4)	2300 (A)	435000	655000	*1,2-DIMETHYLBENZENE*
98	1,1,2,2-TETRACHLOROETHANE	2.6					ACETYLENE TETRACHLORIDE
99	1,2,3-TRICHLOROPROPANE	1.3			300000	450000	TRICHLOROHYDRIN
100	1-NONENE	0.7					
101	trans-1,4-DICL-2-BUTENE	0.9					
102	NONANE	0.3			1050000	1300000	*n-NONANE*
103	ISOPROPYLBENZENE	0.3	100 (3)	100 (B)			*(1-METHYLETHYL)BENZENE*; CUMENE
104	2-CHLOROTOLUENE	0.3					*2-CHLORO-1-METHYLBENZENE*; o-TOLYL CHLORIDE; o-CHLOROTOLUENE
105	3-CHLOROTOLUENE	0.5					*3-CHLORO-1-METHYLBENZENE*; m-TOLYL CHLORIDE; m-CHLOROTOLUENE
106	4-CHLOROTOLUENE	0.5					*4-CHLORO-1-METHYLBENZENE; p-TOLYL CHLORIDE; p-CHLOROTOLUENE
107	PROPYLBENZENE	0.4					n-PROPYLBENZENE
108	3-ETHYLTOLUENE	0.3					*1-ETHYL-3-METHYLBENZENE*; M-ETHYLTOLUENE
109	4-ETHYLTOLUENE	0.3					*1-ETHYL-4-METHYLBENZENE*; P-ETHYLTOLUENE
110	1,3,5-TRIMETHYLBENZENE	0.4			125000	170000	MESITYLENE
111	2-ETHYLTOLUENE	0.3					*1-ETHYL-2-METHYLBENZENE*; O-ETHYLTOLUENE
112	1,2,4-TRIMETHYLBENZENE	0.4	100 (1)	1000 (A)	125000	170000	PSUEDOCUMENE
113	tert.BUTYLBENZENE	0.3					*(1,1-DIMETHYLETHYL)BENZENE*
114	tert.BUTYLCYCLOHEXANE	0.4					
115	1,3-DICHLOROBENZENE	0.8					
116	1-DECENE	1.3	180000 (3)	60000 (A)			n-DECYLENE
117	(CHLOROMETHYL)BENZENE	4.3					alpha-CHLOROTOLUENE; BENZYL CHLORIDE
118	1,5-DICHLOROPENTANE	0.3					
119	isoBUTYLBENZENE	0.3					
120	DECANE	0.5					*n-DECANE*
121	sec.BUTYLBENZENE	0.2					*(1-METHYLPROPYL)BENZENE*
122	3-(CHLOROMETHYL)HEPTANE	0.3					
123	1,2,3-TRIMETHYLBENZENE	0.4			125000	175000	HEMIMELLITENE
124	1ISOPROPYL4METHYLBENZENE	0.5					*METHYL(4-METHYLETHYL)BENZENE*; 3-ISOPROPYLTOLUENE; P-CYMENE
125	1,2-DICHLOROBENZENE	0.3					o-DICHLOROBENZENE
126	INDAN	0.5					*2,3-DIHYDRO-1H-INDENE*; 2,3-DIHYDROINDENE; HYDRINDENE
127	BUTYLCYCLOHEXANE	0.4					n-BUTYLCYCLOHEXANE; 1-CYCLOHEXYLBUTANE
128	1,3-DIETHYLBENZENE	0.4					m-DIETHYLBENZENE

Table 2

Characteristics of the Organics Measured by the Gas Chromatographic Systems of MAMu's 1 and 2

All concentrations are in terms of ug/m3 (micrograms per cubic metre)

		Detection Limits	Standards, Guidelines or Prov.Guidelines	Criterion	TWA	STEL	Alternate Names
129	1,4-DIETHYLBENZENE	0.5					p-DIETHYLBENZENE
130	BUTYLBENZENE	0.3					n-BUTYLBENZENE
131	1,2-DIETHYLBENZENE	0.5					o-DIETHYLBENZENE
132	transDECAHYDRONAPHTHALENE	0.3					t-DECALIN; BICYCLO[4,4,0]DECANE
133	cis-DECAHYDRONAPHTHALENE	0.3					c-DECALIN; BICYCLO[4,4,0]DECANE
134	UNDECANE	0.8					*n-UNDECANE*; HENDECANE
135	1235-TETRAMETHYLBENZENE	0.6					ISODURENE
136	1234-TETRAMETHYLBENZENE	0.6					PREHNITENE
137	1,3-DIISOPROPYLBENZENE	0.8					*1,3-BIS(1-METHYLETHYL)BENZENE*
138	1234TETRAHYDRONAPHTHALENE	0.6					TETRALIN
139	1,4-DIISOPROPYLBENZENE	0.8					*1,4-BIS(1-METHYLETHYL)BENZENE*; ISOPROPYLCUMENE
140	NAPHTHALENE	0.8	36 (3)	22.5 (A)			
141	DODECANE	1.3					*n-DODECANE*

NOTES:
(1) Standard
(2) Guideline
(3) Provisional Guideline
(4) Provisional Guideline for sum of o-, m-, & p-Xylenes

(A) Ambient Air Quality Criterion based on a 24-hour average concentration
(B) Ambient Air Quality Criterion based on a 1-hour average concentration
(please note; if the maximum 1-hour average concentration of a contaminant is LESS than the Criterion concentration based on a 24-hour average, then that Criterion has NOT been exceeded.)

TWA - Time Weighted Average for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed without adverse effect.

STEL - Short Term Exposure Limit - concentration to which workers can be exposed for a short period of time (15 minutes) without adverse effect.

* - Denotes name approved by the International Union of Pure and Applied Chemistry (IUPAC).

Table 2 cont.

Characteristics of the Common Contaminants as Measured Continuously by MAMu's #1 and #2

All concentrations are in terms of ppm (parts per million)

	Detection Limits	Standards, Guidelines or Prov.Guidelines (1/2-hr)		Criterion (1-hr)	TWA	STEL		Alternate Names	
1 SULPHUR DIOXIDE	0.005	0.300		0.25	2	5		SO2	SULFUR DIOXIDE
2 TOTAL REDUCED SULPHUR	0.005	0.027	*	0.027	10	15	**	TRS	
3 NITROGEN OXIDES	0.01	0.25	***	N/A	-	-		NOx	OXIDES of NITROGEN
4 NITROGEN DIOXIDE	0.01	N/A		0.20	5	5		NO2	
5 NITRIC OXIDE	0.01	N/A		N/A	25	35		NO	NITROGEN MONOXIDE
6 OZONE	0.01	0.1		0.08	0.1	0.3		O3	
7 CARBON MONOXIDE	0.1	5.0		30.0	50	400		CO	

* As equivalent H2S and applicable only for Kraft Pulp Mills
TRS may contain any of the following: Hydrogen Sulphide (H2S), Methyl Mercaptan (CH3SH), Dimethyl Sulphide (C2H6S) and Dimethyl Disulphide (C2H6S2) and others.

** The TWA and STEL for TRS as expressed solely as Hydrogen Sulphide concentrations

*** Expressed as NO2

TABLE #3

RUNNYMEDE DEVELOPMENT '86 AMBIENT AIR SURVEY

Common Contaminant Data

Monitoring Periods and Site Information - MAMu#1

Monitoring Period	Start Time	Duration (hrs)	Site ID	Average Winds	Comments
A141	12:22	1.6	A	0910	Goosenecks (May)
A182	10:56	1.8	B	3120	On-site, Dwnwd FH
A183	13:08	1.7	C	3019	Atop Landfill Area
A184	15:11	1.0	D	3312	Rathmore, Dwnwd FH
A201	10:55	1.0	E	1018	Pkg Lot, Dwnwd FH
A242	11:18	1.7	F	3335	@ Entrance, Dwnwd FH
A243	13:33	0.8	G	3430	10 Coalport, Dwnwd FH
A244	14:28	0.9	H	0112	Thora Ave, Upwind

** In the designation of monitoring periods; 'A' refers to Mobile Air Monitoring Unit #1, the next two digits refer to the date and the final digit, the run of the day. FH - fanhouse.

** please note that A141 was in May whereas the rest of the monitoring took place in June of '86.

** Winds xxyy: xx in tens denotes direction from which winds are blowing from; yy wind speed in km/hr.

Maximum Half-Hour (MHH) Average Ground Level Concentrations (glc's)
(units: ppm - parts per million)

Monitoring Period	THC	CH4	CO	TRS	NOx
A141	1.86	1.08	5.31	nd	0.10
A182	1.88	1.01	0.63	0.003	0.05
A183	2.49	1.04	0.51	0.002	0.02
A184	1.94	0.96	0.58	0.003	0.03
A201	1.75	1.10	0.15	nd	0.03
A242	2.52	1.05	0.46	0.011	0.03
A243	2.42	1.00	0.46	0.010	0.03
A244	2.25	1.00	0.82	0.002	0.05

** THC - total Hydrocarbons: CH4 - methane: CO - carbon monoxide:
TRS - total reduced sulphur compounds: NOx - oxides of nitrogen
*** nd - not detected; for TRS, less than 0.002ppm.

TABLE #4

GCRUNNYMEDE_86 Data as ACQUIRED BY MAMU #1

(note F.H. refers to fanhouse)

Site Descriptions	40 m dwnwd F.H. atop landfill (ON LANDFILL PROPERTY)				Rathmore	40 m dwnwd F.H. Plaza pkg lot		70 m dwnwd F.H. @ entrance gate		#10 Coal-port Dr.	Upwind Thora Av.
	JUN 18 12:05	JUN 18 12:53	JUN 18 14:06	JUN 18 14:47	JUN 18 16:13	JUN 20 11:42	JUN 20 13:52	JUN 24 12:10	JUN 24 13:11	JUN 24 14:12	JUN 24 15:12
PROPANE	2.9	4.8	3.7	2.3	9.7	7.8	1.3	5.3	9.2	6.4	8.2
CYCLOPROPANE							0.1				
CHLOROMETHANE						18.2	0.4	4.2	3.8	5.3	4.8
2-METHYLPROPANE							2.3				
1-BUTENE	0.9		0.3	0.5	0.7	5.5	0.7	0.4	3.5	0.7	1.5
2CHLORO2METHYLPROPANE	0.8										
BUTANE	11.6	7.8	7.3	7.4	16.9	215.9	13.4	7.6	51.6	21.9	29.4
2-METHYLBUTANE	6.3	3.9	3.5	3.8	7.7	119.4	8.5	4.7	19.8	12.9	15.9
PENTANE	2.9		1.3		3.5	61.3	4.7	2.4	9.7	4.6	7.5
TRANS-2-PENTENE	0.2				0.2	5.3	0.3		0.9		0.6
2-METHYL-2-BUTENE						13.7					
2,2-DIMETHYLBUTANE	0.3				0.2	3.5	0.3				
CYCLOPENTANE	0.5		0.3		0.5	5.3	0.7				
TRANS12DICHOROETHANE	1.4		0.6		1.5	26.8	1.9				
2,3-DIMETHYLBUTANE	0.4		0.2		0.4	7.1	0.6				
2-METHYLPENTANE	1.7	0.9	0.8	0.8	1.4	31.8	2.2				
3-METHYLPENTANE	1.9	0.8		1.1	1.2	22.4	1.5	1.6		2.4	2.7
1-HEXENE						1.5					
HEXANE	1.8	0.6	0.9	0.5	1.2	19.4	1.9	1.0	2.1	1.0	2.4
METHYLCYCLOPENTANE	0.7		0.4	0.3	0.5	9.9	1.0				
1,1,1-TRICHLOROETHANE	13.5		3.5		6.3	20.1	6.9	3.5			
BENZENE		3.5	3.5		3.7						3.8
TETRACHLOROMETHANE	1.3										
CYCLOHEXANE	0.1	0.1	0.1			1.3	0.4	0.3			0.3
2,3-DIMETHYLPENTANE	1.0		0.7	0.3	0.7	10.3	1.1			0.6	
2-METHYLHEXANE	1.1	0.4	0.8	0.4	0.8	11.8	1.2	0.9		0.7	1.8
3-METHYLHEXANE	0.8		0.6		0.5	8.2	0.8	0.6		0.5	1.1
2,2,4-TRIMETHYLPENTANE	0.7		0.4		0.6	6.9	0.9	0.5	0.7		1.0
HEPTANE	0.8		0.9		0.3	5.4	0.9	0.7	0.6		0.8
METHYLCYCLOHEXANE									0.5		0.8
4-METHYLCYCLOHEXENE						1.3	0.2				
2,5-DIMETHYLHEXANE	0.1		0.1			1.2	0.2				
TOLUENE	10.5	6.7	11.0	9.0	5.9	45.1	5.4	11.9	8.4		8.7
2-METHYLHEPTANE	0.5	0.2	0.6	0.9	0.2	2.7	0.4	0.3	0.4		
4-METHYLHEPTANE	0.2		0.2			1.3	0.2			0.1	0.4
3-METHYLHEPTANE	0.9	0.7	1.2	0.7	0.5	5.3	0.9	0.9	0.8		
1-OCTENE			0.2								
TRANS12DIMETHYLCYCLOHEXAN			0.2								
TETRACHLOROETHENE	2.6		1.5			9.6	0.9	1.1			
2-METHYL-1-HEPTENE			0.4								
OCTANE	0.9		1.5	0.6	0.4	4.1	0.8	0.6			

Table #4 (cont.)

CHLOROBENZENE			0.1								
ETHYLCYCLOHEXANE	0.5		0.5	0.7		2.4	0.6			0.1	0.1
PROPYLCYCLOPENTANE	1.0		1.0	1.6		5.3	1.2				
ETHYLBENZENE	1.8	1.4	3.8	3.0	1.8	8.9	1.4	2.7	1.9		2.6
M-XYLENE	5.0	3.8	17.5	10.1	5.5	29.3	4.2	9.7	8.0	7.5	11.2
4-METHYLOCTANE	0.2				0.2	1.0	0.4		0.2		
2-METHYLOCTANE			0.7								
STYRENE	0.3		0.6	0.8	0.3			0.2	0.5		
O-XYLENE	1.6	1.0	6.4	3.9	2.2	11.3	1.6	2.1	2.6	1.8	3.6
NONANE	0.6		1.8	0.7	0.5	1.9	1.8	0.4	0.6		1.1
ISOPROPYLBENZENE			0.5								
2-CHLOROTOLUENE							0.5				
N-PROPYLBENZENE						2.2		0.4	0.8		0.8
4-CHLOROTOLUENE			1.1	0.3	0.4						
3-ETHYLTOLUENE						7.1	1.3	1.3	2.6	1.3	2.3
4-ETHYLTOLUENE	0.7		4.0	2.0	0.8			0.4	0.8		
1,3,5-TRIMETHYLBENZENE						3.7	1.5	0.8	1.3	0.9	1.5
2-ETHYLTOLUENE						2.9	0.7	0.4	0.8	0.4	0.8
1,2,4-TRIMETHYLBENZENE	1.2	0.8	23.0	12.4	4.4	10.2	2.8	1.6			3.3
tert-BUTYLBENZENE	1.5	1.0	29.6	15.9	5.7	13.1	3.5	2.1	2.8		1.9
1,5-DICHLOROPENTANE			0.3								
DECANE	1.1		6.7	3.2	1.3	2.7	4.4	0.8	1.4		1.5
1,2,3-TRIMETHYLBENZENE			1.2			7.4	2.2	1.2	2.1	0.9	1.4
1ISOPROPYL4METHYLBENZENE	1.1					5.4	0.1	0.7			
INDAN							0.5	0.2	0.8		0.5
N-BUTYLCYCLOHEXANE			0.4								
1,3-DIETHYLBENZENE				1.3							
1,4-DIETHYLBENZENE			4.1	2.8	0.9				0.4		
N-BUTYLBENZENE					0.7				0.3		
UNDECANE	1.6		13.2	8.4	3.1	6.4	3.8	1.4	1.2	0.9	2.2
1235-TETRAMETHYLBENZENE			9.6		1.5		0.4		0.6		
1234-TETRAMETHYLBENZENE			7.3	3.5	1.4		0.5				
1234-TETRAHYDRONAPTHALENE			2.5								
DODECANE	1.1		6.8	5.2	1.8	1.9	0.8	0.4	0.4		0.5
Total Compounds Identified	45	17	53	31	42	50	53	37	34	20	34
Total Hydrocarbons ug/m3	88.4	38.4	189.1	104.3	97.8	832.5	96.5	75.4	141.9	70.8	126.8
Alkanes ug/m3	41.3	20.1	53.6	36.2	53.0	559.8	55.0	30.0	98.7	52.0	76.4
Cycloalkanes ug/m3	2.8	0.1	2.8	2.7	1.0	24.2	3.8	0.3	0.5	0.1	1.2
Alkenes ug/m3	1.0	0.0	1.0	0.5	0.9	25.9	0.9	0.4	4.3	0.7	2.1
Cycloalkenes ug/m3	0.0	0.0	0.0	0.0	0.0	1.3	0.2	0.0	0.0	0.0	0.0
Alkynes ug/m3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aromatics ug/m3	23.6	18.2	124.6	64.7	34.7	146.5	26.1	35.8	34.6	12.8	42.3
Chlorinated alkanes ug/m3	15.6	0.0	3.8	0.0	6.3	38.4	7.3	7.7	3.8	5.3	4.8
Chlorinated alkenes ug/m3	4.1	0.0	2.1	0.0	1.5	36.4	2.7	1.1	0.0	0.0	0.0
Chlorinated aromatics ug/m3	0.0	0.0	1.3	0.3	0.4	0.0	1.0	0.2	0.8	0.0	0.5

TABLE #5

RUNNYMEDE_86-SEQUENTIAL SAMPLERS DATA
[ANALYZED CARTRIDGES.. JUNE 20,24,25 1986 WITH LAB GC]
UPDATED LABLIB..JUNE 9'86

EAST FIELD OFF CLONMORE DR - ATOP LANDFILL AREA
[@100ML/MIN]

	1986 JUN 18 1 HR noon-1pm	1986 JUN 18 1 HR 5pm-6pm	1986 JUN 19 1 HR 12:30am-1:30am	1986 JUN 19 1 HR 3:30am-4:30am	1986 JUN 19 1 HR 7:30am-8:30am	1986 JUN 19 1 HR 10:30am-11:30am	average
PROPANE							
1,3-BUTADIENE							
BUTANE	9.1	16.6					12.8
2-METHYLBUTANE						19.6	19.6
PENTANE	6.5	8.3				14.6	9.8
DICHLOROMETHANE			2.9			2.2	2.6
CYCLOPENTANE	0.5	0.7					0.6
2,3-DIMETHYLBUTANE	0.7	1.0					0.8
2-METHYLPENTANE	3.7	4.8					4.3
3-METHYLPENTANE	2.4	3.3				5.2	3.6
HEXANE	8.7	17.6			20.4	14.0	15.2
METHYLCYCLOPENTANE	2.1	3.2				4.1	3.1
1,1,1-TRICHLOROETHANE						1.5	1.5
BENZENE						6.7	6.7
CYCLOHEXANE	0.8					0.8	0.8
2,3-DIMETHYLPENTANE							
2-METHYLHEXANE	6.0	2.3					4.2
3-METHYLHEXANE		1.6					1.6
TRICHLOROETHENE						3.0	3.0
2,2,4-TRIMETHYLPENTANE		1.9			1.1	2.3	1.8
HEPTANE	20.2	1.6					10.9
METHYLCYCLOHEXANE		0.8			2.7	1.6	1.7
2,5-DIMETHYLHEXANE							
TOLUENE				6.4	7.0	18.7	10.7
2-METHYLHEPTANE							
4-METHYLHEPTANE			1.1		0.4	0.9	0.8
3-METHYLHEPTANE	0.6	0.9					0.7
1-OCTENE							
trans12DIMETHYLCYCLOHEXAN							
TETRACHLOROETHENE			7.8				7.8
OCTANE	0.6	0.7				2.0	1.1
ETHYLCYCLOHEXANE			0.5			0.4	0.4
ETHYLBENZENE	2.1	2.5	4.9		1.9	6.4	3.6
m-XYLENE			13.7	3.2	5.6	21.3	10.9
p-XYLENE					5.9		5.9
3-METHYLOCTANE							
STYRENE			0.5		1.0	1.4	1.0

CORNER OF COALPORT DR & RATHMORE AVE - RESIDENTIAL AREA
[@100ML/MIN]

	1986 JUN 18 1 HR 11:30am-12:30pm	1986 JUN 18 1 HR 2:30pm-3:30pm	1986 JUN 18 1 HR 5:30pm-6:30pm	1986 JUN 18 1 HR 8:30pm-9:30pm	1986 JUN 19 1 HR 1am-2am	1986 JUN 19 1 HR 4am-5am	1986 JUN 19 1 HR 7am-8am	1986 JUN 19 1 HR 10am-11am	average
PROPANE								0.7	0.7
1,3-BUTADIENE							2.2		2.2
BUTANE		21.4						10.5	16.0
2-METHYLBUTANE	7.9		9.3				8.5	8.4	8.6
PENTANE	4.7	15.5	5.9				4.5	5.2	7.2
DICHLOROMETHANE									
CYCLOPENTANE		1.5						0.5	1.0
2,3-DIMETHYLBUTANE								0.8	0.8
2-METHYLPENTANE	3.7	6.9	3.7				3.8	4.0	4.4
3-METHYLPENTANE	2.6	4.5	3.0				3.0	3.3	3.3
HEXANE	10.4	9.1	30.3				13.9	37.5	20.2
METHYLCYCLOPENTANE	2.2	3.3	4.3	8.6		8.6	2.5	5.1	4.9
1,1,1-TRICHLOROETHANE									
BENZENE				20.3			3.2	4.2	9.2
CYCLOHEXANE		0.8	0.6	4.0			4.0		2.3
2,3-DIMETHYLPENTANE							1.4	3.6	2.5
2-METHYLHEXANE	2.2	2.1	4.5				1.5	3.8	2.8
3-METHYLHEXANE	2.0	1.6	4.9				1.1	4.3	2.8
TRICHLOROETHENE		15.6							15.6
2,2,4-TRIMETHYLPENTANE	1.1	1.1	1.4	6.2	0.6		1.1	2.1	1.9
HEPTANE	4.7	2.3	15.1				1.3	18.5	8.4
METHYLCYCLOHEXANE	1.9	1.1					0.7	5.0	2.2
2,5-DIMETHYLHEXANE								0.4	0.4
TOLUENE		8.0	11.2	5.4	14.8	5.4	7.1	12.0	9.1
2-METHYLHEPTANE								0.6	0.6
4-METHYLHEPTANE					1.1			0.6	0.8
3-METHYLHEPTANE	0.9						0.7	1.1	0.9
1-OCTENE				1.9			1.9		1.9
trans12DIMETHYLCYCLOHEXAN				3.1			3.1		3.1
TETRACHLOROETHENE				2.4	2.6	2.0	2.4		2.3
OCTANE	1.1						0.7	1.2	1.0
ETHYLCYCLOHEXANE				8.6	0.5		8.6		5.9
ETHYLBENZENE	2.1		1.8	13.4	4.1		1.7	5.3	4.7
m-XYLENE		1.6	5.2	3.1	12.8	3.1	4.6	13.5	6.3
p-XYLENE				2.9		2.9			2.9
3-METHYLOCTANE					1.3		0.8	1.1	1.1
STYRENE					0.7		1.1	1.1	1.0

Table #5 (cont.)

o-XYLENE			3.7	1.2	1.9	5.2	3.0		0.4		25.4	4.5	1.4	1.8	2.7	6.0
1,2,3-TRICHLOROPROPANE						2.5	2.5									
NONANE	0.8	1.1	2.6		1.1	4.1	1.9	4.0		1.0	1.0	3.5	1.0	1.4	1.8	1.9
ISOPROPYLBENZENE			0.5			0.7	0.6				5.3		0.5	5.3		3.7
2-CHLOROTOLUENE						0.7	0.7					0.6			0.6	0.6
3-CHLOROTOLUENE					0.4	1.4	0.9					1.6				1.6
4-CHLOROTOLUENE		0.6				2.3	1.4					2.1		0.8	0.9	1.3
PROPYLBENZENE		0.5	1.2		0.6	1.0	0.8	0.7			39.2	1.6		0.4	1.0	8.6
3-ETHYLTOLUENE			4.1	1.0	1.5	3.9	2.6				0.9	5.8	0.9	1.7	2.4	2.3
4-ETHYLTOLUENE				0.5	0.8	2.0	1.1				0.5	2.1	0.5	1.0		1.0
1,3,5-TRIMETHYLBENZENE					1.0	2.0	1.5				30.8	3.0	0.6	1.2		8.9
2-ETHYLTOLUENE				0.6	0.8	0.8	0.7				0.5	1.5	0.5	0.9		0.8
tert.BUTYLBENZENE	1.0	2.2					1.6	1.8		1.2				1.2	2.3	1.6
1,2,4-TRIMETHYLBENZENE				1.8	3.7	4.7	3.4				1.5	12.7	1.5	2.4		4.5
DECANE			8.0	4.4		6.5	6.3				2.5		2.5	3.4	4.1	3.1
1,2,3-TRIMETHYLBENZENE				0.9	0.8	1.5	1.1				0.6	3.4	0.6			1.5
1ISOPROPYL4METHYLBENZENE						0.4	0.4					0.5				0.5
INDAN						0.6	0.6					1.4				1.4
1,3-DIETHYLBENZENE						0.4	0.4					0.8				0.8
1,4-DIETHYLBENZENE						0.8	0.8					1.1				1.1
UNDECANE			6.2	5.7	1.6	2.6	4.0				2.4	8.7	2.4	4.5	6.9	5.0
1235-TETRAMETHYLBENZENE											11.3	2.2		11.3		8.3
DODECANE														3.1	1.8	2.4
Total Compounds Identified	16	20	14	10	20	39	20	17	17	16	13	27	16	34	37	22
Total Hydrocarbons ug/m3	65.8	72.2	57.6	25.7	60.2	170.6	75.4	53.9	96.7	103.3	201.7	95.3	34.3	125.6	178.4	111.1
Alkanes ug/m3	59.3	61.7	17.8	10.1	24.6	71.8	40.9	45.2	64.4	79.0	12.1	15.2	5.9	54.6	122.0	49.8
Cycloalkanes ug/m3	3.4	4.7	0.5	0.0	2.7	6.9	3.0	4.0	6.8	4.9	24.3	0.5	8.6	18.8	10.6	9.8
Alkenes ug/m3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	4.2	0.0	0.8
Cycloalkenes ug/m3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alkynes ug/m3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aromatics ug/m3	3.1	5.2	28.6	15.6	32.5	78.3	27.2	4.6	10.0	19.4	161.0	72.7	17.8	44.8	44.4	46.8
Chlorinated Alkanes ug/m3	0.0	0.0	2.9	0.0	0.0	6.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chlorinated Alkenes ug/m3	0.0	0.0	7.8	0.0	0.0	3.0	1.8	0.0	15.6	0.0	2.4	2.6	2.0	2.4	0.0	3.1
Chlorinated Aromatics ug/m3	0.0	0.6	0.0	0.0	0.4	4.4	0.9	0.0	0.0	0.0	0.0	4.3	0.0	0.8	1.6	0.8

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